館岡亜緒* イネ科雑記, IV

Tsuguo TATEOKA* Notes on Some Grasses IV

§ 7. **Systematic position of the genus Brachyelytrum.** The genus *Brachyelytrum* includes two species: the American *B. erectum* Beauv. and *B. japonicum* Hackel found in Japan and Korea (Cheju-do). Although Bentham (1881), Hackel (1887), Hitchcock (1935) a.o. assigned *Brachyelytrum* to Stipeae, the distinctive characteristics of its spikelets have been noticed by various investigators. Ohwi (1941) proposed an independent tribe Brachyelytreae and pointed out that Brachyelytreae and Bromeae have the following characteristics in common: lemma large, scabrous, usually 5-nerved, awned from the tip or awnless; base of floret not pointed and often scabrous; grains often slender, valleculate and hearing a hairy beak at the tip. In 1942, Ohwi disposed of *Brachyelytrum* as a subtribe, Brachyelytrinae, of Bromeae. Pilger (1954) referred *Brachyelytrum* to Festuceae—Festucinae to which Bromeae are closely related. Some characteristics of *Brachyelytrum*, namely glumes much shorter than the lemma, the latter having five distinct nerves and a straight awn, the style attached at the tip of the ovary, etc. support placing this genus in Festuceae. The difference between *Brachyelytrum* and Stipeae found in spikelet chracteristics are as follows:

Brachyelytrum	Stipeae
Rachilla prolonged behind the palea.	Rachilla not prolonged.
Glume much shorter than the lemma.	Glumes large, often as long as the lemma longer.
5 nerves of lemma distinct.	3~7 nerves of lemma obscure.
The awn of lemma straight.	The awn of lemma usually twisted and geniculate.
Lemma firm, but thinner than that of Stipeae.	Lemma more or less hardened or rigid as in Paniceae.

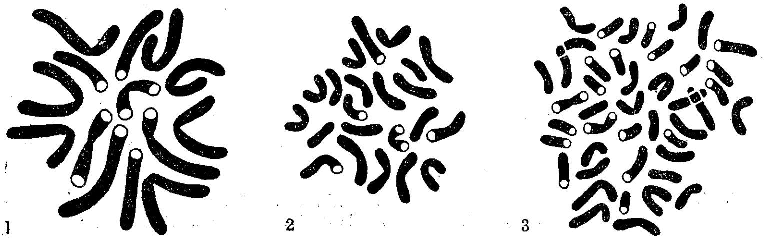

Fig. 1. Somatic chromosomes ×3000. 1, *Festuca elatior* Linn. 2n=14. 2, *Brachyelytrum japonicum* Hackel 2n=22. 3, *Stipa spartea* Trin. 2n=44. (Reprinted from Tateoka 1955)

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Chromosomes of *Brachyelytrum* were examined by Brown (1950) and Tateoka (1955). According to them, *B. erectum* and *B. japonicum* both have small sized 22 chromosomes (b=11) in root tip cells. As described above, *Brachyelytrum* shows a near relationship to Festuceae and Bromeae regarding the spikelet chracteristics, but their chromosomal characteristics are evidently different. Namely, Festuceae

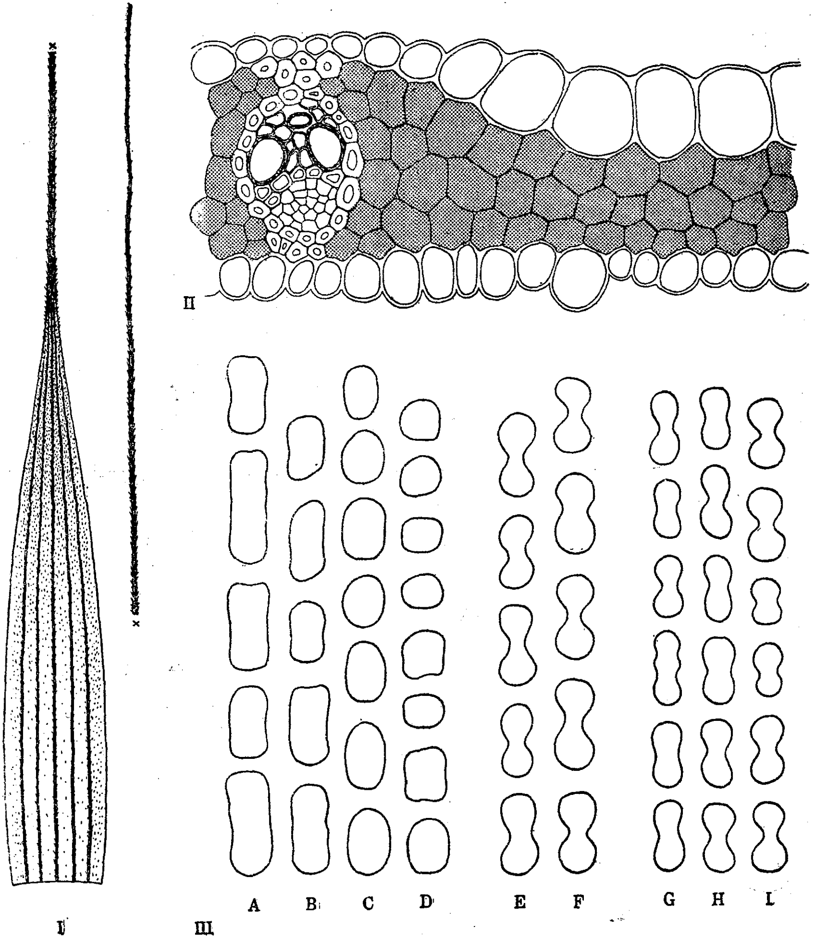

Fig. 2. I. Lemma of *Brachyelytrum japonicum* Hack. ×7.5. II. Transverse section of the leaf of *B. japonicum* ×375. III. Siliceous cells of the epidermis. A, *Bromus catharticus* Vahl. B. *Bromus japonicus* Thunb. C. *Festuca arundinacea* Schreb. D. *Festuca extremiorientalis* Ohwi. E. *Brachyelytrum japonicum* Hack. F. *Brachyelytrum erectum* Beauv. G. *Oryzopsis miliacea* Benth. and Hook. H, *Achnatherum pekinense* Ohwi. I, *Orthoraphium coreanum* Ohwi A, B ×300. C, D, E, F ×450. G, H, I ×600.

and Bromeae have large (∼medium) chromosomes and seven as basic number, showing no resemblance with *Brachyelytrum* (cf. Fig. 1). On the other hand, the chromosome situation of *Brachyelytrum* is clearly similar to that of Stipeae. *Stipa*, *Achnatherum*, *Oryzopsis*, *Piptochaetium*, etc., typical members of Stipeae, have small chromosomes of basic 11 or 12 very similar to those of *Brachyelytrum*.

The author examined the characteristics of leaf structure in *B. erectum* and and *B. japonicum*. The results obtained are as follows: Epidermis—In both species no bicellular hairs can be found, nor hairs bearing a sheath of epidermal cells at the base; dumbbell shaped siliceous cells are found in the upper and the lower epidemis (Fig. 2, III, E•F). Transverse section—A mechanical cell layer surrounds the larger vascular bundles, although it scarcely develops around the smaller ones; chloroplasts are uniformly distributed throughout the mesophyll; the arrangement of chlorophyll tissue is comb-like (Fig. 2, II). In transverse leaf section, Stipeae shows the Festucoid type as well as Bromeae and Festuceae. In *Brachyelytrum* the same situation is found as shown in Fig. 2, II. In the epidermal characteristics Stipeae is somewhat different from Bromeae and Festuceae. The latter two have typical Festucoid type and their siliceous cells are rectangular or round (Fig. 2, III, A∼D). In contrast to them, some members of Stipeae show dumbbell-shaped siliceous cells which occur in Panicoid type, although the others are festucoid in the epidermal characteristics (Fig. 2, III, G∼I). The shape of siliceous cells of *Brachelytrum* species reported above is dumbbell-like, showing a relationship to Stipeae and a difference from Bromeae and Festuceae.

Considering the chracteristics of *Brachyelytrum* described above, the reference of this genus to Bromeae or Festuceae cannot be supported. According to the author's opinion, *Brachyelytrum* must be treated as an independent tribe which should be placed near Stipeae.

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*Brachyelytrum*の染色体構成はb=11で小型というイネ科植物では珍らしいもので，他にこのような構成をもつものはStipeaeとAristideaeがあるのみである。Stipeaeはその多数の種類が鱗皮3片という古い形質をもち，イネ科のなかの特異な位置をしめるものとして扱われてきた。*Brachyelytrum*の染色体と葉の解剖学的特徴はStipeaeと非常に似ており，それらの近縁が裏ずけられるが，外部形態の差異からして*Brachyelytrum*はStipeaeのやや変化した型のものと推定される。C. E. Hubbard博士は私信によると，Brachyelytreaeに*Brachyelytrum*のほかに*Podophorus*(南米Juan Fernandez諸島産)をも含めるとの意見である。他に*Brachyelytrum*との類縁の考え

られる群として Festuceae と Bromeae があるが，本文に記したように *Brachyelytrum* はそれらとは殊に染色体の特徴においてはつきりした差異をもつている。Bromeae, Festuceae ともに地中海地方にその発祥地をもつと推定される Eufestuciformes group の構成員であるが (館岡 1956 a, b 参照)，*Brachyeltrum* は分布的にも違つており，それに含めることはできない。Hubbard (1948) は Stipeae をイネ科の中の孤立した小群と考えているが，被穎大型で外穎の芒が膝曲転捩する点，染色体と葉の解剖学的特徴における若干の類似などから Danthonieae と遠い類縁をもつものとみることもできる。この点なおはつきりしない。

Literature cited

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○オニシバリの紫花品 (檜山庫三) Kōzō HIYAMA: *Daphne pseudo-Mezereum* A. Gray forma *atropurpurea* Hiyama

オニシバリの花はいうまでもなく緑黄色であるが，稀に暗紫花を開くものがある。1956年3月25日，武蔵国浅川町の梅ノ木平付近で飯泉優氏の採集されたものを見たが，それはちようどジンチョウゲの花が帯色するように，萼の外面が暗紫色を呈するものであつた。そこで，このものをムラサキオニシバリ (野草22巻8号2頁，1956年) と呼んでおいたが，今，その学名を次の様に定める。

Daphne pseudo-Mezereum A. Gray forma **atropurpurea** Hiyama, nov. f. Calices extus atropurpurei.—Nom. Jap. Murasaki-onishibari.

Hab. Hondo: prope Umenokidaira, Asakawa, Prov. Musashi (Masaru Iizumi, Mar. 25, 1956—typus in herb. Natio. Sci. Mus. Tokyo).